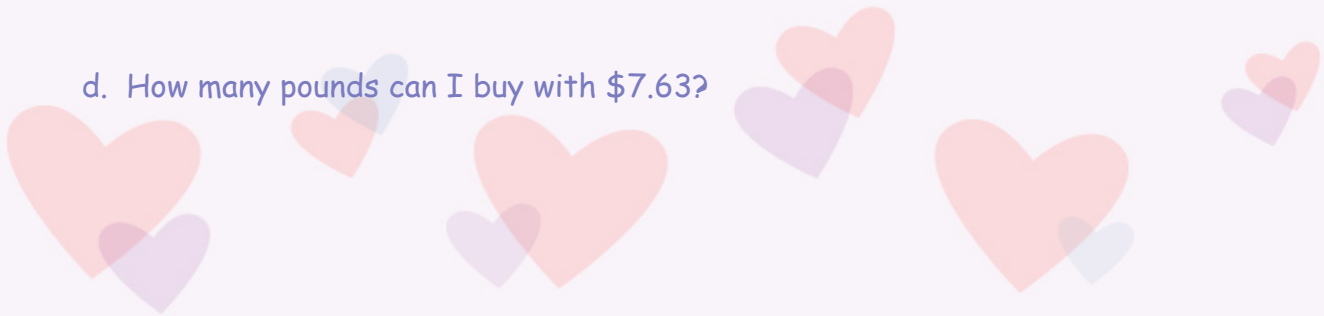


Warm-Up

1. Sonia bought 4 pounds of apples for \$4.36.
 - a. Find the unit rate for one pound of apples.
 - b. Write an equation to find the cost of any given pounds of apples.
 - c. What is the constant of proportionality?
 - d. How many pounds can I buy with \$7.63?



How do you think scientists calculate the population of wildlife, such as deer, fish, penguins, and other animals?



Scientists often use a method called *Capture-Recapture* to calculate the population of wildlife.

Scientists begin by *capturing* a sample number of the animal and tagging them. Then they release the tagged specimens. Next the scientists *capture additional* samples. They count the number of animals in each sample and the number of those that are tagged. (The tagged animals are called *recaptured*.) After several samples have been collected, the scientists use a mathematical formula to estimate the actual population of the animal.



$$\frac{\text{Original Captured (original tagged)}}{\text{Number of Rockfish in Chesapeake Bay}} = \frac{\text{Total Tagged in samples (recaptured)}}{\text{Total Captured in samples}}$$



$$\frac{\text{Original Captured (original tagged)}}{\text{Number of Rockfish in Chesapeake Bay}} = \frac{\text{Total Tagged in samples (recaptured)}}{\text{Total Captured in samples}}$$

Captured	Recaptured
158	17
164	30
142	17
177	40
149	21
153	44
Total =	Total =

Follow-Up Questions

How did your first estimate (from the beginning of Activity 4) compare with the actual amount?

What do you think would happen to your calculated amount if you were to increase the number of trials ?

What would happen to your calculated amount if some of the tags wore off?

What factors might effect the accuracy of this method of calculating animal populations in real-life situations?

The Capture - Recapture Method of estimating populations of animals works well with fish. For what other animals would this method work and why? With what animals would this method not work and why?

